

What Is Holding Back Household Solar Adoption in India? The Subsidy Paradox Explained

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Solar Adoption in India Latest News

- India added more solar power in 2025 than any country in the world except China. Solar now accounts for nearly **30% of India's total installed electricity capacity**.
- Yet two flagship government schemes for decentralised solar — PM Suryaghar Yojana and PM-KUSUM — are performing well below their targets.
- The article examines why, and arrives at a counter-intuitive finding: existing power subsidies are undermining solar adoption, and the solution being explored is more subsidies.

The Two Flagship Schemes

- **PM Suryaghar Yojana**: Targets installation of rooftop solar units on one crore households. Benefits include free electricity up to 300 units per month and a cash subsidy for equipment purchase.

- **PM-KUSUM (Pradhan Mantri Kisan Urja Suraksha Evam Utthan Mahabhiyan):** Targets farmers — helping them set up small solar plants on unused land or install solar water pumps for irrigation. Farmers can earn income by selling surplus solar electricity or save on diesel and pump electricity bills.
- Together, both schemes carry a combined budget of roughly Rs 95,000 crore.

Achievements: How Far Have These Two Schemes Reached

- Combined, the two schemes have installed about **13 GW** of decentralised solar against a **target of 40 GW** by the end of the FY2025-26 — less than one-third of the goal.
- PM-KUSUM's most successful component has been standalone off-grid solar water pumps for farmers — 10.9 lakh pumps installed against a target of 14 lakh.
- The scheme, originally meant to be completed by 2022, has been extended due to pandemic disruptions.
- Under PM Suryaghar, the five best-performing states — Gujarat, Maharashtra, Uttar Pradesh, Kerala, and Rajasthan — account for nearly 70% of all 33 lakh rooftop installations so far.
- States like Tamil Nadu, Karnataka, Punjab, Bihar, and Jharkhand lag significantly.

The Central Problem: Free Electricity Kills the Incentive

- When grid electricity is already **free or heavily subsidised**, households and farmers have no financial reason to invest in rooftop solar.
- Installing a solar system requires an upfront cost of a few lakh rupees. That investment only makes financial sense if it saves you money on your electricity bill. If your bill is already near zero, the calculation simply does not work.
 - The Ministry of New and Renewable Energy itself confirmed this to Parliament's Estimates Committee: one of the primary reasons for low PM Suryaghar adoption is that the effective electricity tariff for domestic consumers is near zero or actually zero in many states.
- **Punjab** is the clearest example. It offers 300 units of free electricity to domestic consumers every month and completely free power to all agricultural tubewells.
- Punjab's annual power subsidy bill exceeded Rs 20,000 crore last year — yet its adoption of both solar schemes is among the lowest in the country.
- Similarly, **Karnataka** (Rs 27,000 crore subsidy bill) and **Tamil Nadu** (Rs 15,700 crore subsidy bill) show relatively poor solar scheme uptake.
- In contrast, **Gujarat, Kerala, and Maharashtra** — which have higher electricity tariff rates, especially for large consumers — have seen much higher adoption.

The Solution: Ironically, More Subsidies

- The answer some states have found is to offer **additional, one-time financial incentives** on top of the central scheme's benefits — making the upfront equipment purchase easier to bear.
- **Uttar Pradesh** and **Rajasthan**, both of which already offer heavily subsidised power, have done remarkably well on PM Suryaghar and PM-KUSUM by layering extra state-level subsidies to help consumers cross the upfront cost barrier.

- This is not as contradictory as it sounds. Recurring power subsidies are an unending fiscal liability for state governments — they go on forever.
- A one-time equipment subsidy is a finite expenditure that eventually reduces the need for recurring subsidies.
- The Estimates Committee of Parliament endorsed this logic and suggested the government explore ways to make upfront costs easier for consumers.
- If PM Suryaghar is fully implemented, it is estimated to save the government approximately Rs 75,000 crore per year in electricity costs.

Why Decentralised Solar Is Increasingly Urgent

- There are two structural reasons why getting households and farmers onto solar matters beyond just reducing subsidy bills.
- **Land scarcity** for large solar parks is becoming a real constraint on India's centralised solar expansion. Decentralised generation — on rooftops and farmlands — uses space that already exists without displacing other land uses.
- **Hydropower** is stagnating as a backup source. Traditionally, hydropower supplemented grid electricity during peak summer demand, driven by monsoon reservoir levels.
- But large hydropower capacity has stopped growing, and peak electricity demands in April-May 2026 were met largely through solar power — not hydro.
- In a year of low rainfall and high temperatures, which is increasingly the norm due to climate change, decentralised solar becomes a critical buffer against grid stress.

Conclusion

- India aims for 500 GW of non-fossil fuel capacity by 2030. Understanding why decentralised solar schemes underperform despite large budgets is important for policy analysis.
- The paradox of power subsidies undermining solar adoption illustrates the unintended consequences of poorly designed subsidy regimes.
- Also, the wide variation in solar scheme performance across states reflects how state-level electricity pricing decisions can either enable or undermine central government clean energy programmes.

Source: IE

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